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MOTOR CONTROL

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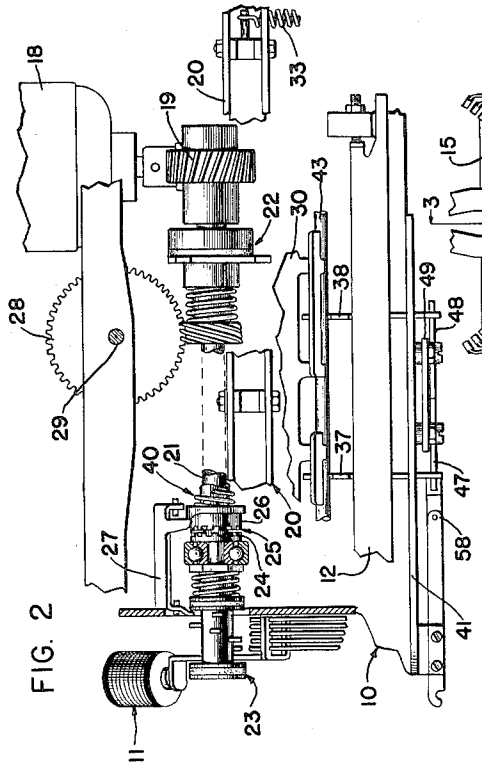


FIG. 2

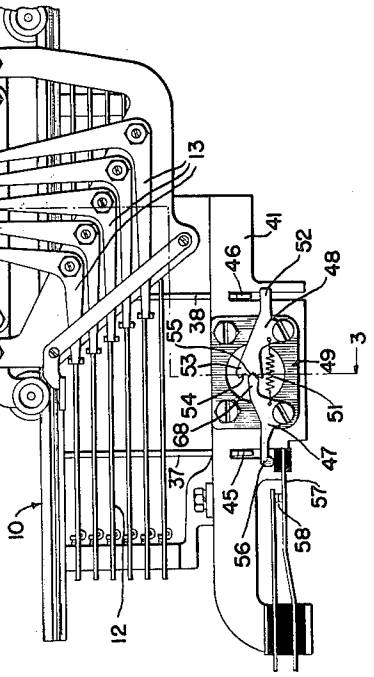


FIG. 1

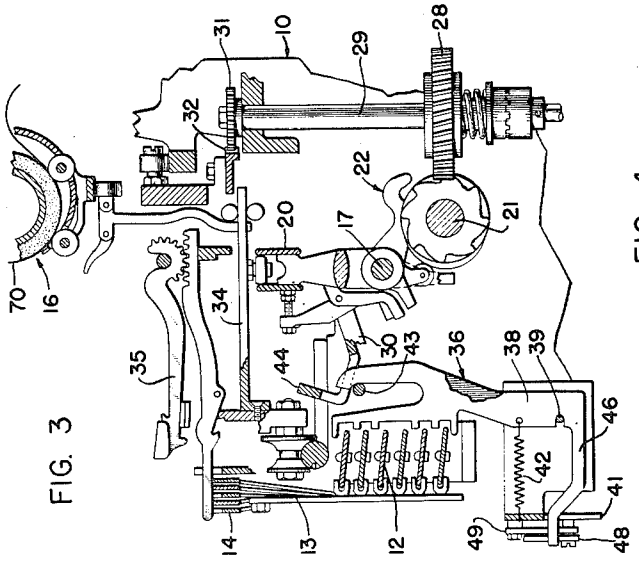


FIG. 3

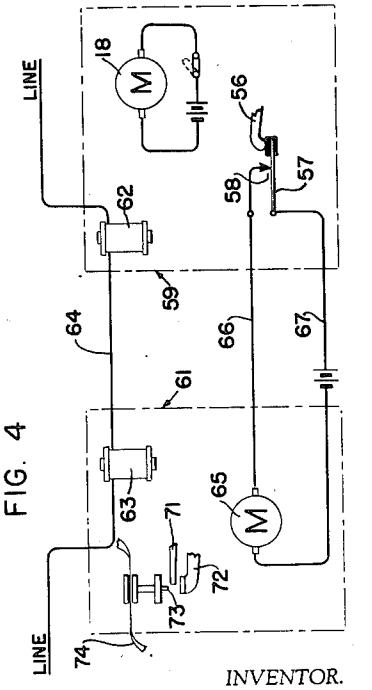


FIG. 4

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MOTOR CONTROL

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20 Claims. (Cl. 178—23)

The present invention pertains to printing telegraph systems and apparatus and more particularly to telegraph systems involving a plurality of recorders and control instrumentalities therefor.

The principal object of the invention is to provide a signal responsive apparatus for selectively rendering telegraph machines connected in a common circuit effective for recording message matter.

Another object is to render one of a pair of locally situated telegraph recorders selectively controllable by the other of the recorders.

Another object is to control a pair of locally situated apparatuses, each capable of producing a distinctive record, and to provide means in one of said apparatuses for selectively conditioning the other apparatus for operation.

A feature of the invention is the provision of a plurality of signal controlled machines having their signal magnets connected in the same signal line wire, and means controlled by the signal line magnet of one machine independently of the other signal line magnet for controlling the operation of the other machine.

To accomplish the foregoing and other objects of the invention, a telegraph printing apparatus of the type shown in U. S. Patent No. 1,904,164 is provided with a selectively actuated switch mechanism which is included in the circuit of the motor of a reperforating device of the type shown in U. S. Patent No. 1,884,753. Specifically, the contact built into the printing apparatus or machine for the purpose of controlling the reperforator motor is controlled by two function levers and is latched in either the opened or closed position. The reperforator selector magnet and the printer selector magnet remain operatively connected in the line at all times, but the contact to be controlled is in the operating circuit of the driving motor for the reperforator.

When one of the function levers of the printing machine is selected in response to a particular code combination of impulses, the contact in the reperforator motor circuit is opened and is held open by a latch, thereby stopping the motor. When the other function lever is selected in response to a different code signal, the latch is tripped, permitting the contact to close and causing the reperforator motor to start. When a tape transmitter is used to transmit the messages to the printer and reperforator, the code combination utilized for starting the reperforator is usually folowed by a number of non-printing code combinations; for example, "letters" combinations, to allow time for the reperforator motor to come up to speed and for the selector mechanism to be brought into phase. "Letters" shift code has been found to be an effective combination for bringing the selector mechanism into step quickly, since there are no spacing impulses other than the "start" impulse, and hence the selector cam can only be released at the proper time in the signal cycle.

A better understanding of the present invention may be had from the following description, taken in conjunction with the accompanying drawing, wherein,

Fig. 1 is a fragmental front elevation of the printing apparatus embodying the switch control means according to the present invention;

Fig. 2 is a partial plan view of the arrangement shown in Fig. 1;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1; and

Fig. 4 is a schematic circuit diagram of the arrangement according to the present invention.

In the accompanying drawing, like reference characters indicate similar parts throughout. For a complete understanding of details not disclosed herein, and which form no part of the present invention, reference may be had to U. S. Patent No. 1,904,164 for the printing machine and Patent No. 1,884,753 for the reperforator or auxiliary apparatus.

Briefly, having reference to Figs. 1, 2, and 3, the printing apparatus to which the features of the present invention are applied, comprises a typing unit indicated generally as 10, which includes a primary selecting mechanism, indicated generally as 11 (Fig. 2), which is of the sword and T-type, as disclosed in U. S. Patent No. 1,745,633 to S. Morton et al., and a secondary selector or selector vane assembly, indicated generally as 12. The selector vane assembly 12 controls, through a series of bell cranks 13, a corresponding series of curved code bars 14 carried in a movable type carriage, indicated generally as 15. As set forth in Patent No. 1,904,164, this type carriage is movable longitudinally with respect to a stationary platen indicated generally as 16, Fig. 3.

Referring particularly to Fig. 2, a motor 18 supplies power, through a gear 19, to a main operating shaft 21, which carries a portion of the spacing mechanism of the printing apparatus, indicated generally as 22, and the selector cam assembly, indicated generally as 23. As is known in this type of apparatus, power is com-

municated from the motor 18 to a cam assembly, indicated generally as 40, carried loosely on the shaft 21, through a grab clutch 25. Portion 24 of grab clutch 25 constantly rotates with the shaft 21, which has also frictionally connected thereto the escape wheel and gear of the spacing mechanism 22 and the selecting cam drum 23. Portion 24 is adapted to be cooperatively engaged with the driven portion 26 when a throwout lever 27 is operated in timed relation with the reception of code signals from a cam on the cam drum 23.

The spacing mechanism is fully described in Patent No. 1,904,164 and illustrated in Fig. 19 therein and controls, through gear 28, shaft 29, gear 31, and rack 32 (Figs. 2 and 3), the movement of type carriage 15 to form character spaces, acting in this movement to wind up a carriage return spring (not shown).

Positioned parallel to the main operating shaft 21 is an auxiliary shaft 17 (Fig. 3) on which are supported various mechanisms; for example, printing bail 20, function lever bail 30, and the escapement mechanism for the spacing mechanism 22. The printing bail 20, which is actuated by a printing spring 33 (Fig. 2) in proper timed relation in the operating cycle, functions to reciprocate a pull bar operating member 34 to cause the operation of a type bar 35, as fully described in the aforementioned patent.

The selector vanes 12 (Fig. 1), as set forth in Patent No. 1,904,164, control a series of function levers, indicated generally as 36 (Fig. 3), among which are contact operating function levers 37 and 38 (Figs. 1 and 2), which, like all of the other function levers 36, are pivoted on a common pivot rod 39 (Fig. 3). Function levers 37 and 38, like the other function levers of the series, are provided with individual springs 42 tensioned between the function lever and a plate 41. Springs 42 tend to rotate their respective function levers about pivot 39, but are restrained by the function lever bail 30 acting, through rod 43, on arm 44.

Function levers 37 and 38 are provided with forwardly extending (leftwardly as viewed in Fig. 3) portions 45 and 46, respectively, which cooperate with levers 47 and 48, respectively. Levers 47 and 48 are pivotally carried on a plate 49 mounted on the function lever comb 41 and are attrahently biased by a common spring 51. Lever 48 comprises an arm 52 adapted to cooperate with portion 46 of function lever 38, and arm 53, which is provided with a pair of stepped conformations or shoulders 54 and 55. Lever 47 comprises an arm 56 which cooperates with portion 45 of function lever 37, as well as with spring 57 of contact 58. By this arrangement of levers 47 and 48, lever 47 may assume two positions; namely, a clockwise position, as shown in Fig. 1, wherein contact 58 is closed and end 68 engages step or shoulder 55 of lever 48; and a counterclockwise position wherein end 68 engages step or shoulder 54, and contact 58 is thus held open. As indicated in Fig. 1, contact 58 is supported on plate 41.

Having reference to the schematic circuit arrangement (Fig. 4), the printing unit, which is of the type disclosed in Patent No. 1,904,164, is indicated diagrammatically by the broken line square. Similarly, the reperforator unit 61, which is of the type disclosed in Patent No. 1,884,753, is also indicated diagrammatically by a broken line square. Although a reperforator unit has been shown, in the present embodiment, as the controlled apparatus, it is, of course, understood that many other types of apparatus may be controlled with equal facility. The selector magnets 62 and 63 of the units 59 and 61, respectively, are shown as connected in the same signal line wire 64. Within the unit 59 is shown symbolically the motor 18 with its obvious circuit. Also, in the unit 59 is indicated the arm 56 of lever 47 acting on contact spring 57 of contact 58. In the unit 61 is shown the motor 65 connected by conductors 66 and 67 with the contact 58. Of course, motors 18 and 65 may receive power from a common source instead of from separate batteries, as shown. Motor 65 and contact 58 are connected in the same electrical circuit, in which manner the driving motor 65 for the unit 61 is controlled by the contact 58 contained in printing unit 59. As fully described in Patent 1,884,753, the selector magnet 63 controls, through a selector mechanism (not shown), a series of interponents 71, which, if selected, cause, upon actuation of a hammer 72, a corresponding series of punches 73 to perforate a tape 74.

General operation

As illustrated in Fig. 4, the contact 58 is closed, thus indicating that the motor 65 is running and that the units 59 and 61 (Fig. 4) are both operating. Under these conditions, the message is being received by selector magnet 62 of the printing unit 59 to provide a printed record on the page 70 arranged in front of platen 16, and also, the same signals are being received by selector magnet 63 of the reperforator or auxiliary unit 61 to provide a perforated record in tape 74 corresponding to the printed record. Under normal conditions, the perforated record thus produced is utilized for retransmission. In the event that the message received over line 64 is intended only for the printing unit 59 and not for retransmission, this message is preceded by a control signal or particular code combination which will effect, through the selector mechanism 23 and selector vane assembly 12, the selection of function lever 37, in a manner fully described in Patent No. 1,904,164. Thereafter, upon operation of the printing bail 20 and the function bail 30, function lever 36 is rocked by its spring 42 in a counterclockwise direction, as viewed in Fig. 3, into momentary selective engagement with vanes 12, the function lever 36 then being returned to its clockwise position upon the return movement of the function lever bail 30. However, upon its counterclockwise movement, as mentioned, its arm 45 acts upon arm 56 of lever 47 to rock said lever 47 counterclockwise against the action of spring 51 to cause, through spring 57, the contact 58 to open. Contact 58 remains open due to the fact that arm 68 of lever 47 is brought into latching engagement with step 54 of lever 48, whereat it is retained until disengaged by the selection of function lever 38, as will hereinafter appear.

Thus, it is noted that upon the selection of function lever 37, contact 58 is opened and the circuit for motor 65 of the auxiliary apparatus or unit 61 is broken, thereby rendering the unit 61 ineffective to perforate the tape. When this condition is established, the ensuing message over the line 64 will be recorded only upon the page 70 of the unit 59 and not upon the tape 74 of the unit 61.

Then, at the conclusion of the locally intended message, a particular code combination is received over line 64, which effects the selection of function lever 38 in the manner previously de-

scribed. Function lever 38, when operated counterclockwise, acts, through its arm 46, upon arm 52 of lever 48 to rotate lever 48 clockwise against the action of its spring 51 to unlatch arm 68 of lever 47 from stepped portion 54 and to effect the latching engagement of said arm 68 with stepped portion 55. In this manner, lever 47 is rotated clockwise by spring 51 to enable the closing of contact 58. When contact 58 is thus closed, the circuit for motor 65 is closed and said motor is started into operation. Subsequent messages on line 64 are then recorded on both units 59 and 61.

Obviously, changes may be made in the details set forth without departing from the essentials of the invention or from the spirit and scope thereof as defined in the following claims.

What is claimed is:

1. In combination, a printing mechanism, a perforating mechanism, means responsive to code signals for controlling the selective operation of said printing mechanism, means responsive to the same code signals for controlling the selective operation of said perforating mechanism, and means comprising a pair of pivoted engageable elements controlled by said first recited means independently of said second recited means for controlling, dependent upon the manner of engageability of said elements, the operation of said perforating mechanism.

2. In combination, a signal line, a plurality of signal responsive means connected in said line, apparatus associated with each means and controlled thereby, motive means included in each apparatus, and means in one of said apparatuses comprising a pair of pivoted engageable elements effective under the selective control of the signal responsive means of said one of said apparatuses to control, dependent upon the manner of engageability of said elements, the motive means of the other apparatus.

3. In combination, a signal line, a first apparatus responsive to code signals connected in said line, a second apparatus responsive to code signals also connected in said line, motive means included in each apparatus, means in said first apparatus to control the motive means of the other apparatus, and a pair of pivoted engageable elements effective in response to certain code signals to control, depending upon the manner of engageability of said elements, said second recited means.

4. In combination, a signal line, a plurality of signal responsive means connected in said line, apparatus associated with each means and controlled thereby, motive means included in each apparatus, and a pair of attrahently biased elements in one of said apparatuses effective under the control of the signal responsive means of said one of said apparatuses to control the motive means of the other apparatus.

5. In combination, a first apparatus, a signal responsive means therefor, a second apparatus, separate motive means for said first and second apparatuses, a pair of function levers in said first apparatus selectively controlled by said signal responsive means, a pair of attrahently biased levers cooperably related to each other and controlled by said function levers, and a contact included in the circuit of the motive means for said second apparatus controlled by said levers to control the effectiveness of said last mentioned motive means.

6. In combination, a signal line, a first apparatus responsive to code signals connected in said line, a second apparatus responsive to code signals also connected in said line, motive means included in each apparatus, a pair of selectively controlled function levers in said first apparatus, a pair of attrahently biased levers controlled by said function levers, and a contact controlled by said levers to control the effectiveness of the motive means of said second apparatus.

7. In combination, a printing mechanism, a perforating mechanism, selecting means responsive to code signals for controlling the selective operation of said printing mechanism, selecting means responsive to the same code signals for controlling the selective operation of said perforating mechanism, a pair of function levers controlled by said first recited selecting means, a pair of attrahently biased levers controlled by said function levers, and a contact controlled by said levers to control the effectiveness of said perforating mechanism independently of said second recited selecting means.

8. In combination, a first apparatus, a signal responsive means therefor, a second apparatus, motive means included in each apparatus, a plurality of selector vanes permutably controlled by said signal responsive means, a pair of function levers selectably controlled by said vanes, a pair of levers cooperably related to each other and controlled by said function levers, and a contact included in the circuit of the motive means for said second apparatus controlled by said levers to control the effectiveness of said last mentioned motive means.

9. In combination, a signal line, a first apparatus responsive to code signals connected in said line, a second apparatus responsive to code signals also connected in said line, motive means included in each apparatus, a pair of selectively controlled function levers in said first apparatus, a contact operating lever controlled by one of said function levers, a detent lever for said contact operating lever controlled by the other of said function levers, and a contact effective under the control of said contact operating lever and said detent lever for governing the effectiveness of the motive means of said second apparatus.

10. In combination, a signal line, a first apparatus responsive to code signals connected in said line, a second apparatus responsive to code signals also connected in said line, motive means included in each apparatus, a pair of selectively controlled members in said first apparatus, a switch operating means controlled by one of said members, a detent means for said switch operating means controlled by the other of said members, and a switch effective under the control of said operating means for controlling the effectiveness of the motive means of said second apparatus.

11. In combination, a signal line, a first apparatus responsive to code signals connected to said line, a second apparatus responsive to code signals also connected in said line, motive means included in each apparatus, a pair of selectively controlled members in said first apparatus, a switch operating element controlled by one of said members, a detent element for said switch operating element controlled by the other of said members, a single biasing means for said elements, and a switch effective under the control of said elements and said biasing means for controlling the effectiveness of the motive means of said second apparatus.

12. In combination, a printing mechanism, a

perforating mechanism, a single line magnet responsive to code signals for controlling the selective operation of said printing mechanism, a single line magnet responsive to the same code signals for controlling the selective operation of said perforating mechanism, and means comprising a pair of pivoted engageable elements controlled by said first recited single line magnet independently of said second magnet for controlling, dependent upon the manner of engageability of said elements, the operation of said perforating mechanism.

13. In combination, a first apparatus, a signal responsive means therefor, a second apparatus, separate motive means for said first and second apparatuses, a pair of function levers in said first apparatus selectively controlled by said signal responsive means, a pair of pivoted elements having confronting engageable extremities controlled by said function levers, and a contact included in the circuit of the motive means for said second apparatus controlled by said elements to control through the manner of engageability of said extremities the effectiveness of said separate motive means.

14. In combination, a first apparatus, a signal responsive means therefor, a second apparatus, motive means included in each apparatus, a plurality of selector vanes permutably controlled by said signal responsive means, a pair of function levers selectively controlled by said vanes, a pair of pivoted elements having confronting engageable extremities controlled by said function levers, and a contact included in the circuit of the motive means for said second apparatus controlled by said elements to control through the manner of engageability of said extremities the effectiveness of said last-mentioned motive means.

15. In combination, a printing mechanism, a perforating mechanism, means responsive to code signals for controlling the selective operation of said printing mechanism, means responsive to the same code signals for controlling the selective operation of said perforating mechanism, and means comprising a pair of pivoted elements having confronting engageable extremities controlled by said first recited means independently of said second recited means for controlling through the manner of engageability of said extremities the operation of said perforating mechanism.

16. In combination, a signal line, a plurality of signal responsive means connected in said line, apparatus associated with each means and controlled thereby, motive means included in each apparatus, and means in one of said apparatuses comprising a pair of pivoted elements having confronting engageable extremities effective under the selective control of the signal responsive means of said one of said apparatuses to control through the manner of engageability of said extremities the motive means of the other apparatus.

17. In combination, a signal line, a first apparatus responsive to code signals connected in said line, a second apparatus responsive to code signals also connected in said line, motive means included in each apparatus, means in said first apparatus to control the motive means of the other apparatus, and a pair of pivoted elements having confronting engageable extremities effective in response to certain code signals to control through the manner of engageability of said extremities said second recited means.

18. In combination, a printing mechanism, a perforating mechanism, a single line magnet responsive to code signals for controlling the selective operation of said printing mechanism, a single line magnet responsive to the same code signals for controlling the selective operation of said perforating mechanism, and means comprising a pair of pivoted elements having confronting engageable extremities controlled by said first recited single line magnet independently of said second magnet for controlling through the manner of engageability of said extremities the operation of said perforating mechanism.

19. In combination, a signal line, a first apparatus responsive to code signals connected in said line, a second apparatus responsive to the same code signals also connected in said line, motive means included in each apparatus, a circuit for the motive means of said second apparatus, a switch in said circuit, and means comprising a pair of interengageable elements controlled by said first apparatus independently of said second apparatus for controlling, dependent upon the manner of engageability of said elements, the operation of said switch.

20. In combination, a signal line, a first apparatus responsive to code signals connected in said line, a second apparatus responsive to the same code signals also connected in said line, motive means included in each apparatus, a circuit for the motive means of said second apparatus, a circuit controlling means in said circuit, and means comprising a pair of interengageable elements controlled by said first apparatus independently of said second apparatus for controlling, dependent upon the manner of engageability of said elements, the operation of said circuit controlling means.

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